# Slavomír Hanzely

linkedin.com/in/slavomirhanzely
slavomir-hanzely.github.io
slavomir.hanzely@kaust.edu.sa
+421 948 555 355

**Synopses**
- **Researcher** tackling problems on the boundary of Mathematics and Computer Science. Enjoying testing my skills against new challenges
- Proven performance in working independently, collaborating with peers, and leading projects
- Efficiently communicates complex ideas to audiences of all levels and cultures
- Qualities: quick learner, persistent, well-organized, high attention to details

**Expertise**  Optimization, Machine Learning, Federated Learning, Mathematics, Algorithms, Programming

**Education**

**King Abdullah University of Science and Technology**, Saudi Arabia
*Ph.D., Applied Mathematics and Computational Sciences*  2023 (expected)
*MSc., Applied Mathematics and Computational Sciences*  2020
Topic: Optimization for Machine Learning, group of P. Richtárik

**Comenius University**, Slovakia
*BSc., Computer Science*  2019
Thesis: Random sampling from uniform distribution on multidimensional polyhedra

**Publications**
- Convergence of First-Order Algorithms for Meta-Learning, arxiv 2023
  Mishchenko, Hanzely, Richtárik
- A Damped Newton Method Achieves Global $\mathcal{O}(1/k^2)$ Convergence Rate, NeurIPS 2022
  Hanzely, Kamzolov, Pasechnyuk, Gasnikov, Richtárik, Takáč
- Distributed Newton-Type Methods with Communication Compression, arxiv 2022
  Islamov, Qian, Hanzely, Safaryan, Richtárik
- ZeroSARAH: Nonconvex Optimization with Zero Full Gradient Computation, arxiv 2021
  Li, Hanzely and Richtárik
- Lower Bounds & Optimal Algorithms for Personalized Federated Learning, NeurIPS 2020
  F. Hanzely, S. Hanzely, Horváth and Richtárik
- Adaptive Learning of the Optimal Mini-Batch Size of SGD, OPT-ML, NeurIPS 2020
  Alfarra, Hanzely, Albasyoni, Ghanem and Richtárik

**Presentations**  NeurIPS, IST Austria, KINIT, Flatiron Institute, MBZUAI, Ecole Polytechnique (planned)

**Awards**

**King Abdullah University of Science and Technology**
- Dean's Award (3 consecutive years)
- Ph.D. scholarship of USD 75,000/year
- MSc. scholarship of USD 70,000/year

Vojtech Jarnik International Mathematical Competition
2017: 8-10th place (39 universities participated)

Mathematical Olympiad
2016: 3rd place, Slovak national round
        International Mathematical Olympiad participation
2015: bronze medal, Middle European Mathematical Olympiad

| **Work Experience** | **Flatiron Institute, Simons Foundation** | June 2022 – July 2022 |
|---|---|---|

*Research associate, group of R. Gower*
Investigatigated ML loss reformulations and designed fast variance-reduced algorithms.

**Mohamed bin Zayed University of AI** Feb 2022 – Apr 2022
*Research assistant, group of M. Takáč*
Developed second-order optimization methods that are fast, practical and provably convergent.
- Resulting in a paper accepted at NeurIPS 2022 (link)

**Wincent** (crypto trading company) Jun 2020 – Aug 2020
*Research intern / software engineer*
Analyzed, modeled, designed practical algorithms to optimize resource allocation of the company; and implemented the developed methods under various constraints.

**Mathematical Olympiad** 2017 – 2019
- Marked problems at the national round (3 times)
- Organized national selection camp for the International Mathematical Olympiad
  - created the problem sets for a day and marked the solutions (3 times)
  - restructured format of the camp and created all problem sets (team of 4 people)

**Extracurricular Activities**

**Trojsten** (nonprofit organization) 2016 – 2019
*Volunteer*
- Prepared competitions and camps (in Math, CS) for talented high school students
  - co-organized 14 competitions (3 as a head organizer)
  - co-organized 20 camps (4 as a head organizer)
  - problem selection: 20 problem sets, ∼200 hours of work
  - marked solutions: ∼600 solutions, ∼150 hours of work
- Lectured: delivered 38 lectures (including a half-day lecture)

**Technical skills**

**Research**
- Topics: Federated Learning, Higher-Order Algorithms, Stochastic Optimization
- Reviewing: ICML (conference), NeurIPS (conference), TLMR (journal)
- Qualities: patience, persistence, well-organized

**Programming**
- Python, PyTorch, Julia, C/C++, Bash
- Flexibility: experience with Matlab, R, Mathematica, SQL, Java, Javascript, Haskell

**Cross-cultural communication**
- Co-organized large ultimate frisbee tournament
  (largest tournament in MENA region & first mixed tournament in Saudi Arabia)
- Studying and working in various international communities
- Organizing a research group seminar
- Organizing a research session at IFORS 2023 conference
- Languages: English, Slovak, French (basics), Russian (passive), Spanish (passive)